REMARKS

This Response is in reply to the Office Action rejection mailed on April 2, 2008. Claims 1-44 are pending in the application, with each of the claims being rejected.

The claims are directed to a method and apparatus for implementing common rate control in a reverse link channel in a CDMA network. Common rate control is one technique for controlling the data transmission rate of mobile stations on the reverse link. A base station periodically (e.g., once per frame) estimates the reverse link load and sends rate control commands to the mobile stations based on the current load at the base station. Typically, the base stations sends a "1" to instruct the mobile stations to increase their data rate and sends a "0" to instruct the mobile terminals to decrease their data rate. With common rate control, a single rate control command is sent to a group of mobile stations. Thus, all mobile stations in the group will increase or decrease their data rates in unison with one another, resulting in large fluctuations in load at the base station.

The present invention avoids large fluctuations in load at the base station by using a probabilistic rate change mechanism. The rate control commands are interpreted as load indications by the mobile station. The mobile stations filter the rate control commands (load indications) to generate a load tracking value. The load tracking value is then used to determine a rate change probability. The rate change probability computed at each mobile station determines the probability that it will change its data transmission rate in the current evaluation period responsive to the rate control command/load indication. For example, if the rate change probability is .66, then two-thirds of the mobile stations will increase their data rate responsive to a "1." As a result, some of the mobile stations will change rates while other mobile stations will continue to transmit at their current rate.

Independent claims 1 and 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,999,425 (hereinafter Cheng) in view of U.S. Patent

Publication No. 2005/0105604 (hereinafter Ito). Cheng describes a method implemented at a base station to set a maximum rate limit for the reverse link channel. In Cheng, the aggregate data transmission rate for all mobile stations transmitting on the reverse link is computed. The aggregate data transmission rate is then filtered and normalized to obtain the maximum achievable aggregate date rate for the reverse link. The final result is compared with a set of thresholds to obtain the maximum rate limit that is set for each mobile station. For example, if the reverse link load is 100% of the maximum load, the rate limit is equal to 9.6%. See Cheng, col. 6, lines 40-48; Fig. 3. If the reverse link load is 50% of the maximum load, the rate limit is set to 76.8. See Cheng, col. 6, lines 40-48; Fig. 3. Presumably, the base station in Cheng sends the rate limit to the mobile stations, but does not send rate control commands/load indications to the mobile station, as required by claim 1. On the contrary, Cheng suggests that the mobile stations autonomously change their rate up to the rate limit set by the base station.

Ito discloses a bit rate control method to suppress fluctuations in the rate when the rate is determined based on a state of a network. Ito's rate control method first establishes a plurality of preset discrete bit rates. A target bit rate is then determined, as well as the bit rates adjacent to the target bit rate in the plurality of preset bit rates. The bit rate at which each mobile station is set is probabilistically determined based on how close the current bit rate is to the target bit rate. If the current and target bit rates are close, then the probability that the bit rate will remain at the current bit rate is high. As the current bit rate deviates further from the target bit rate, the probability that the bit rate will remain at the current bit rate is lowered, and the bit rate is set to one of the adjacent bit rates. Thus, the overall average bit rate of all the mobile stations is close to the target bit rate.

Claim 1 is directed to a method of adjusting the transmission rate of a mobile station and includes four elements. The first element is "receiving periodic load indications from a base station." As noted above, there is no indication that the base station in Cheng transmits a

periodic load indication to the mobile stations. Instead, Cheng uses the reverse link load to compute a maximum rate limit for the mobile stations. The Examiner states that this limitation would have been obvious because Cheng teaches that in an HDR system an end user can automatically select or control the rate at which data is transmitted on the reverse link. While Cheng does teach that the end user can control the rate in an HDR system, this says absolutely nothing about the mobile station receiving periodic load indications from the base station. Regardless of what rate the user selects, there is no indication of what the resulting load will be.

Claim 1 further recites "calculating a load tracking value based on two or more periodic load indications," and "determining a rate change probability as a function of the load tracking value." The Examiner looks to ¶0034 of Ito to disclose the latter limitation. This section of Ito describes determining a probability used to select an arbitrary bit rate adjacent to a target bit rate, then a judgment is made based on the probability as to which adjacent bit rate is selected. Frankly, this section of Ito has absolutely nothing to do with calculating a load tracking value based on two or more load indications, nor does it have anything to do with determining a rate change probability as a function of the load tracking value. The only similarity between ¶0034 of Ito and the stated claim 1 limitations is that each involves a probability. The claim 1 limitations refer to a load tracking value, and Ito refers to setting a bit rate. Therefore, it would not be obvious to one of skill in the art to combine the teachings of ¶0034 of Ito with Cheng's teaching of calculating a load tracking value because they are directed to two completely different endeavors.

Finally, claim 1 recites "selectively changing the transmission rate of the mobile station responsive to a current rate control command based on the rate change probability." Cheng does not disclose selectively changing data rate based on a rate change probability, and the Examiner looks again to ¶0034 of Ito to disclose this limitation. As discussed above, neither Cheng nor Ito, alone or in combination, disclose determining a rate change probability as a

function of the load tracking value. Therefore, Ito cannot then disclose changing the transmission rate based on the rate change probability.

As discussed above, neither Cheng nor Ito teach or suggest all of the limitations of independent claim 1. Therefore, the combination of Cheng and Ito fail to establish a *prima facie* case of obviousness, and the rejection of claim 1 must fail as a matter of law. Thus, independent claim 1 and dependent claims 2-7, 12-19, 21, and 22 are not made obvious by Cheng and Ito and are in condition for allowance.

Claim 23 is directed to a mobile station that practices the method set forth in claim 1. Claim 23 recites "a receiver for receiving periodic load indications from a base station," and "a controller to vary the data transmission rate of the mobile station." Claim 23 further recites that the controller is configured to "calculate a load tracking value based on two or more periodic load indications," "determine a rate change probability as a function of the load tracking value," and "selectively change the data transmission rate of the mobile station responsive to a current rate control command based on the rate change probability." As discussed above, neither Cheng nor Ito disclose all of these claim limitations. For at least these reasons, independent claim 23 and dependent claims 24-29, 34-41, 43, and 44 are not made obvious by Cheng and Ito and are in condition for allowance.

Claims 8-11 and 30-33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng in view of Ito, in further view of U.S. Patent No. 6,490,460. Dependent claims 8-11 are patentable for at least the reasons stated above for independent claim 1. Dependent claims 30-33 are patentable for at least the same reasons stated above for independent claim 23.

Claims 20 and 42 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng in view of Ito, in further view of U.S. Patent No. 6,397,070. Dependent claim 20 is patentable for at least the reasons stated above for independent claim 1. Dependent claim 42 is patentable for at least the same reasons stated above for independent claim 23.

Based on the foregoing, it is believed that the claimed invention is patentable over the prior art made of record and withdrawal of the rejections under 35 U.S.C. § 102 and § 103 is respectfully solicited.

Respectfully submitted,

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